

Claims

- [c1] 1. A method for ascertaining the location of core-generated features in a hollow investment-cast article, such as a gas turbine airfoil or nozzle part, said investment cast article based at least in part on a free-floating core design, comprising:
providing a core-based datum structure including a plurality of datum pads that are produced by the core and which are integral to a portion of core-generated print-out or flashing, said core-based datum structure being exclusive of any fixed datum structure that is integral to external portions of said cast article; and
using said plurality of datum pads as a geometric reference system for internal core-produced features after casting said article.
- [c2] 2. The method of claim 1 wherein the plurality of pads are integral to a portion of core-generated print-out or flashing that is to be removed during a subsequent machining operation.
- [c3] 3. The method of claim 1 wherein the plurality of datum pads are formed on an internal cavity portion of a gas turbine airfoil or nozzle part.

[c4] 4. A ceramic core for use in investment casting of a turbine airfoil part that has at least one internal cavity, said core including at least one portion that produces a print-out region which may be removed from a cast airfoil part via subsequent machining, comprising a plurality of datum pads located at portions of the core forming said removable print-out region, wherein said plurality of datum pads provide a reference system for locating core-generated internal structural features of the airfoil part.

[c5] 5. The ceramic core of claim 4 wherein said plurality of datum pads are located on portions of the core forming an internal cavity portion of a cast airfoil part.

[c6] 6. A method of fabricating a hollow cast article, such as a turbine airfoil or nozzle part, using an investment casting process based at least in part on a free-floating core design, comprising:
forming a core structure having a plurality of integral positive or negative datum regions for producing datum pads on an investment cast article, wherein said plurality of datum regions are integral to a portion of the core structure which produces a core print-out or flashing region that may be removed from the cast article via subsequent machining;
molding a fugitive material pattern of said article around

said core structure;
producing an investment casting of said fugitive material
pattern and core structure;
removing the core structure from the casting;
performing machining operations on internal core-
produced features of the cast article, wherein the datum
pads are used as a geometric reference system for pre-
cisely locating said internal core-produced features.

- [c7] 7. The method of claim 6 further comprising removing
said core print-out or flashing region containing said
datum pads.
- [c8] 8. The method of claim 6 wherein the core is ceramic.
- [c9] 9. The method of claim 6 wherein the datum regions are
located at a portion of the core forming an internal cavity
portion of the casting.
- [c10] 10. A method of investment casting of a hollow turbine
airfoil or nozzle part enabling precision machining and/
or gauging of internal core-produced structural features
of said part, comprising:
forming a core structure having a plurality of integral
datum regions for producing datum pads on a cast part,
wherein the datum pads are used as a geometric refer-
ence system for precisely locating said internal core-

produced features.